CLAIMS.

1. A process for preparing an activating support for metallocene complexes in the polymerisation of olefins comprising the steps of:
   a) providing a support consisting in particles formed from at least one porous mineral oxide;
   b) optionally fixing the rate of silanols on the surface of the support;
   c) functionalising the support with a solution containing a fluorinated functionalising agent;
   d) heating the functionalised and fluorinated support of step c) under an inert gas and then under oxygen;
   e) retrieving an active fluorinated support.

2. The process of claim 1 wherein the porous mineral oxide support particles have any one of the following properties:
   a) a specific surface area of from 100 to 1000 m^2/g,
   b) a porosity of from to 4 cm^3/g
   c) a pore diameter of from 7.5 to 30 nm
   d) an average diameter of from 1 to 100 µm.

3. The process of claim 1 or claim 2 wherein the support has from 0.25 to 10 OH– radicals per nm^2 resulting either from a thermal treatment under inert gas at a temperature of from 100 to 1000 °C during at least 60 minutes or from a chemical treatment.

4. The process of any one of the preceding claims wherein the support is silica.

5. The process of any one of the preceding claims wherein the fluorinated acid sites are created by reacting the support particles' OH- groups with at least a functionalisation and fluorination agent selected from compounds comprising at least one aluminium, one fluor and one organic group that can react with the OH- groups, optionally in combination with any one or more compounds

selected from MF, MR^2, $M'F_2$, $M'R^2F$, or $M'R^2_2$ wherein M is a group 1 metal of the Periodic Table, M' is a group 2 metal of the Periodic Table and R^2 is an alkyl group having from 1 to 20 carbon atoms.

6. The process of claim 5 wherein the functionalising and fluorinating agent is a compound of formula (I)

$$Al(R^1)_2F \quad (I)$$

wherein the R^1 groups, can be the same or different and are linear or branched alkyl groups having from 1 to 20 carbon atoms.

7. The process of claim 6 wherein the R^1 groups are the same and are methyl, ethyl, isopropyl or linear or branched butyl.

8. The process of claim 6 or claim 7 wherein the functionalising and fluorinating agent is diethylaluminiumfluoride.

9. The process of any one of the preceding claims wherein the amount of functionalisation and fluorination agent is of 0.5 to 20 millimoles per gram of support.

10. The process of any one of the preceding claims wherein the heat treatment under inert gas is carried out at a temperature of from 200 to 600 °C for a period of time of from 1 hour to 2 days and the heat treatment under oxygen is carried out at a temperature of from 200 to 600 °C for a period of time of 1 hour to 2 days.

11. The process of any one of the preceding claims wherein the amount of aluminium and of fluor in the treated activating support is respectively of 0.25 to 10 Al/nm² and of 0.25 to 20 F/nm².

12. An activating support obtainable by the process of any one of claims 1 to 11, characterised in that each atom of fluor is directly linked to an atom of aluminium.

13. A supported metallocene catalyst system for the polymerisation of olefins, comprising:
(a) a metallocene catalyst component that is optionally pre-alkylated ;
(b) optionally an alkylating agent; and
(c) an activating solid support for metallocene, prepared by the process as defined above, wherein the metallocene catalyst component is impregnated on the activating support before or after the optional alkylation treatment.

14. The supported metallocene catalyst system of claim 13 wherein the metallocene complex is

MLx (II)

wherein
- M represents a transition metal belonging to Group 4 of the Periodic Table of Elements according to the Handbook of Chemistry and Physics, 76th edition;
- L represents a ligand coordinated to the transition metal, at least one ligand L being a group having a cycloalkadienyl-type backbone and the ligands L are the same or different; and
- x is equal to the valency of the transition metal.

15. The supported metallocene catalyst system of claim 13 or claim 14 wherein the optional alkylating agent is selected from
$AlR^5_nX_{3-n}$ (III)

wherein the R^5 groups, may be the same or different, and are a substituted or unsubstituted alkyl groups, containing from 1 to 12 carbon atoms, X is halogen or hydrogen and n is an integer from 1 to 3.

16. The supported metallocene catalyst system of claim 15 wherein the alkylating agent is triethylaluminium (TEAL) or triisobutylaluminium (TIBAL).

17. The supported metallocene catalyst system of any one of claims 13 to 16 wherein the amounts of alkylating agent and of metallocene complex are such that the molar ratio Al/M is of from 1 to 10000.

18. The supported metallocene catalyst system of any one of claims 13 to 17 wherein the amount of activating support is of 0.01 to 2000 mg of support per micromole of metallocene complex.

19. A method for preparing a supported metallocene catalyst system that comprises the steps of:

a) providing the activating support of claim 12;
b) dissolving a metallocene catalyst component that has optionally been pre-alkylated in an organic solvent;
c) optionally providing an alkylating agent;
d) impregnating the solution of step b) and optionally the alkylating agent of step c) onto the support either simultaneously or in any order;
e) retrieving a supported catalyst system.

20. A process for homopolymerising or copolymerising olefins that comprises the steps of:

a) providing the supported metallocene catalyst system of any one of claims 13 to 18:
b) injecting a monomer and an optional comonomer;
c) maintaining under polymerisation conditions;
d) retrieving a polymer.

21. The process of claim 20 wherein the olefin is ethylene or propylene.

22. Polymers having the shape of regular full grains and having a narrow molecular weight distribution obtainable by the process of claim 20 or claim 21.

23. Use of the supported metallocene catalyst system of any one of claims 13 to 18 for preparing polymers having improved morphology and narrow molecular weight distribution.